DOCUMENT RESUME

ED 140 657 FL 008 657

AUTHOR Milner, Joseph O.
TITLE Stress and Deep Structure: A Measure of Language Acquisition, Grades K-6.
PUB DATE 25 Mar 77
NOTE 14p.; Paper presented at the Southeastern Conference on Linguistics (March 25, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Child Language; *Deep Structure; Elementary Education; Elementary School Students; *Language Development; *Language Patterns; Language Research; Language Skills; Psycholinguistics; *Semantics; *Stress (Phonology)

ABSTRACT

A study was undertaken to see whether developmental patterns of language acquisition could be discovered in children beyond age five. Specifically, the study attempted to uncover a pattern in the development of the skill of stress interpretation, or the understanding of the effect of emphasis of a particular word on the deep structure of the language surrounding it. Eight students from kindergarten through grade six were shown four cards, each of which offered a different picture relating to the protocol sentence "Bob didn't throw the football to Sam." The sentence was then played for the students as three different sentences by placing the stress on "throw," "Sam," and "Bob," respectively. Those who understood the effect of stress on deep structure were able to correctly match up the taped sentence and the card depicting the boys' action with the football. The following conclusions were derived from the results of the testing: although correct responses did not increase even by grade level, a developmental pattern of responses did emerge for individuals. Also, males responded correctly more often than did females, first children offered more correct responses than did other children, and top students had more correct responses than did bottom students. (Author/AM)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED140657

STRESS AND DEEP STRUCTURE: A Measure of Language Acquisition, Grades K-6.

Joseph O. Milner

INTENT

In connection with my study with Carol Chomsky in the fall of 1975 I became increasingly interested in her assertion that the language acquisition process has not jelled by age five but is an ongoing procedure which extends throughout the total range of the elementary school years. Chomsky (1969) had attempted to measure rather sophisticated language competences which for many upper range school children had not yet been acquired; I hoped to extend this investigation to an even more sophisticated language competency which might take an even greater number of years to acquire. I was anxious too that this language facility not be a matter of formal instruction since I was dealing with school age children. One of the most sophisticated such acquisitions would seem to be that of understanding the effect of stress on deep structure. Miller and Ervin (1964) among others have shown very young children's competence in this general area through discussions of the difference in deep structure between dyadic phrases like " daddy car" (possession) and "daddy car" (location). Cruttenden (1974) too has examined stress in more mature speakers (5-10) and found that the different stress patterns used in reporting football scores allowed respondents to correctly predict which team had won when the final team's score was omitted. Neither of these investigations however attempted to locate a developmental pattern of acquisition, while my own was specifically intended and designed to uncover such patterns if they existed. I should add too that I was interested in understanding the relationship between excellence in language arts performance in the classroom and language acquisition in this subtle,

FL008657

unschooled area, and in looking at the acquisitional differences between males and females, and those between first-born and other children.

DESIGN AND METHODOLOGY

The basic design of this study necessarily was such that one protocol sentence was constructed so that it would have multiple deep structures if different words received stress or emphasis in three separate oral readings. The protocol sentence "Bob didn't throw the football to Sam" was chosen because the use of "didn't" in the simple, commonplace (and some would add sexist and traditionalist) sentence creates a new deep structure when the stress is moved from the Actor to the Action and then to the Receiver: when the stress is placed on the Actor, Bob, the deep structure becomes, (Bob did something other than throw the football to Sam); and when the stress is placed on the Receiver, Sam, the deep structure becomes, (Bob threw the football to someone other than Sam). Having designed a protocol sentence which offered such ambiguity with the movement of stress, it was necessary to construct a means of measuring the students' competence in this area of language, their understanding of the different deep structures created by the changing placement of the stress. The instrument constructed so as to measure this understanding was a set of four pictures in which three primitive stickmen are in each instance exchanging the football in a different manner. In each picture the stickmen are labeled and differently colored and the direction of the ball is suggested by an arrowed line. In picture #1, the stickman,Bob, is seen handing (not throwing) the ball to Sam; in picture #2,

stickman Bob is seen throwing the football to Tom; in picture #4, stickman Tom is seen throwing the football to Sam. Thus when a student hears the sentence "Bob didn't throw the football to Sam" and understands that its deep structure becomes, (Bob did something other than throw the football to Sam), he/she must select the picture which shows Bob not throwing, but handing the football to Sam. The student has to pick up the subtleties of stress and as well has to understand that the negation refers to the form of the action, since that was the aspect of the sentence which received the stress, a rather sophisticatied manipulation of language in both instances. Thus the correct response would be picture #1. The some operation would of course be undertaken in the other two variations of this protocol sentence.

As a further part of the design, Carol Chomsky's pattern of testing eight students from each grade was employed. Of the eight from each grade level, the teachers were asked to select two students whom they would evaluate as their most outstanding (Top) students in language arts, two whom they felt to be the least able (Bottom) in language arts, and four whom they felt to be the typical, average (Middle) language arts students. Chomsky's ceiling of fifth grade students was extended to the sixth grade, for this acquisition was felt to be even more sophisticated and would thus be more delayed than those she had examined. Because sex has been seen as a significant determiner of language effectiveness, and because difference in language nurturance or vicarage as Bruner puts it would be differentiated for firstborn and other children, those two variables were added to the total design of the study.

The method by which this design was implemented was rather simple and straightforward. Each of the 8 students from each grade was assigned a number by the teacher and was interviewed in an order so that their

rank (T, M, or B) remained unknown. The interviews were conducted individually in a separate but nearby room in the school. After a few preliminary exchanges the students were asked their age and the month of their birthday and how many other brothers and sisters were in their family. They were then asked if they would like to play a game with a tape recorder and some pictures of boys playing with a football. Before the playing of the taped sentences began, the students were asked to study the four pictures of the stickmen and to tell who each of the stickmen were, what object they were exchanging and what they saw taking place in each of the pictures in order to insure that recognizing names or understanding the action of the picture did not restrict the ability to respond correctly. After a few minutes of study and discussion we moved into the directions for responding to the taped protocol sentences. Each student was told to "listen to the sentence that I recorded about the boys and the football and after hearing it three times to choose the picture which shows what the sentence said." After the third hearing each was asked to choose the correct picture and given five seconds to respond. Then the sceond and third protocol sentences were played and the responses recorded. For each student the order of the sentences remained constant: the THROW sentence with stress placed on the Action (Bob didn't <u>throw</u> the football to Sam) was presented first; the SAM sentence with stress placed on the Receiver was presented second; the BOB sentence with stress placed on the Actor was presented third. The arrangement of the pictures, however, did not remain constant. They were rearranged so as to remove the possibility that the pattern of their placement might have cued-in students' responses. The tapes too were used so as to remove any suggestability

or varibility that might be injected over time. The taped sentences and football picture cards were also tested out on two adults to insure the reliability of the intended stress and the capability of the pictures to measure the understanding of its effect on deep structure.

RESULTS

The correct responses to the THROW, SAM and BOB sentences were pictures #1, #4, and #2 respectively. The responses of the 56 students K-6 are listed by grade level. For each student his/her number; age and month of birth; sex; race; THROW response; SAM response; BOB response; language arts ranking (T, M, B) are recorded on the ditto sheet provided. The final entry (T, M, B) was affixed after the interviews were completed by the teachers who had kept a list of the names and their own rankings of the students to whom they had assigned the original numbers. I never recorded the names of these students and never knew the language arts rank assigned to them.

CONCLUSIONS

The following conclusions were derived from the results of the testing:

1. There was an increase in correct responses K-2, but the 3,4 group offered unexpected results. The number of correct responses decreased on those two succeeding grade levels. Unexpectedly, level 2 had more correct responses than any other grade level. The pattern of perfect responses was similarly skewed by the exceptionally good performance of level 2 students.

2. A pattern of responses emerged which seemed to be a developmental one. There were more correct responses progressively for the THROW, SAM and BOB sentences (88%, 54%, and 34%). More significantly, in regard to suspecting a developmental pattern with one exception in each case, all students who responded correctly to the BOB sentence could respond correctly to the SAM sentence and to the THROW sentence, and all students who could respond correctly to the SAM sentence could also respond correctly to the THROW sentence. (The two exceptions have credible explanations.) If this were indeed a developmental pattern it suggests that a kind of horizontal decalage is present wherein the same general cognitive structure is being applied to one task but not to another. Here the progression seems to be one from understanding stress when applied to Action, then to the Receiver and finally to the Actor. Explanation of this progression may lie in the dominance of attention toward the active or relational aspect of the communication, followed by the less dominant attention given to the reception of the action, and finally to the least attention given to the originator of the action. The number of correct responses for the three were 49, 31 and 18 respectively. A further explanation for the correct responses may be found in the fact that though the students may not understand how stress effects deep structure, they know that the sentence's deep structure can not be, Bob threw the football to Sam (only four students offered picture #3 as their response to any of the sentences), so they select the other three pictures almost exclusively.

This explanation can only support a kind of random selection of pictures which are not clearly wrong, it can not explain the increasing number of correct responses.

3. Males responded correctly more often than did females (60% to 34%) and individual males were overwhelmingly more able to respond perfectly (1, 4, 2) than females (38.7% to 20%). Middle males offered an even more impressive record of all correct responses.
4. First children offered more correct responses (83.9% to 43.2%) than did other children and were also better in offering perfect responses (60% to 19.5%).
5. Top ranked language arts students had more correct responses (69% to 40.5%) than did low achieving language arts students. The difference was even more significant (42.9% to 7.1%) in perfect responses.

DISCUSSION

The study's most significant finding seems to be that the acquisition of this particularly sophisticated language competency, and others like it perhaps, extends beyond even the limits that Chomsky had explored. As a part of this notion, we see as well that average students of the K and first grade levels may have language competencies that top ranked students will not acquire even five grade levels beyond them. Another highly significant finding centers around the good success of males in this subtle language skill. Since males are typically felt to be less sophisticated in formal language arts schooling, some new understanding of males' response to the language arts curriculum may need to be taken into consideration. This applies even more strongly to the average rather than the extremely bright male student. It must be added too that the findings do not go

against the grain of all of our understandings of what makes for producers of more sophisticated language, for the top ranked students did in fact do best as a group in the testing, as did the first born students.

One final note of explanation should be directed to the high number of correct responses among the second grade students and among the males. The second graders were in a three grade suite in which they were the youngest and in many respects brightest in order that they might not feel the sting of competition too keenly. This brightness coupled with their desire to match the standards of the older children (and more of them were first borns than was the case in any of the other lower grades) may have led them to great growth in language skills over the course of the year. For that reason I would like to extend this study to other less special kinds of schooling situations and to higher grade levels. I have found college students who were unable to understand the effects of stress on deep structure and as Carol Chamsky has suggested some adults never acquire these language competencies. I also believe that the startling performance of the males needs to be more carefully confirmed by removing any sex bias built into the design or methodology of the study. In this regard, I think the presence of a male "tester" may have been more emcumbering to females than the fact that the content was male oriented. Had the sentence about football been a matter that the females had to devote more time to, sexual interest and inclination might have been a deterrent to performance, but because the sentences took less than a minute to consider, I feel that this particular facet of the test did not decrease female performance. In further studies male and female testers should be used. If the same results are confirmed language arts teachers and curriculum designers need to give careful consideration to these findings.

REFERENCES

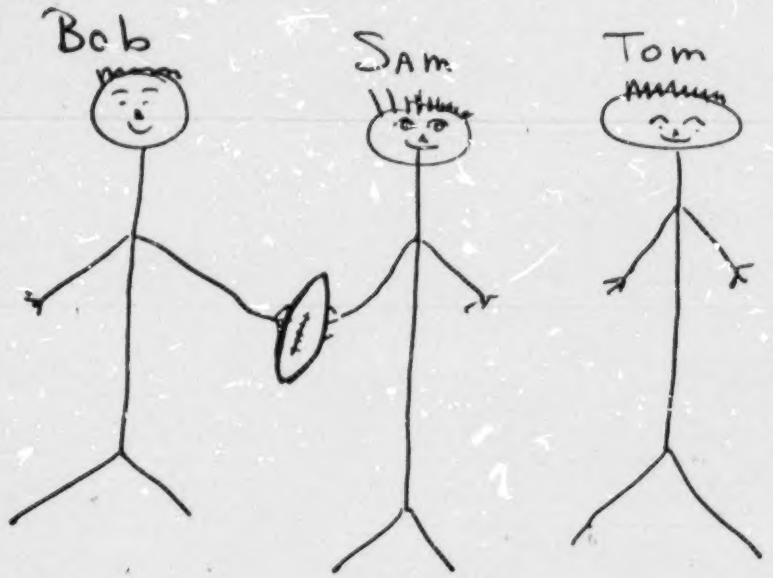
Chomsky, C. S. The acquisition of language from five to ten. Cambridge, Massachusetts: MIT Press, 1969.

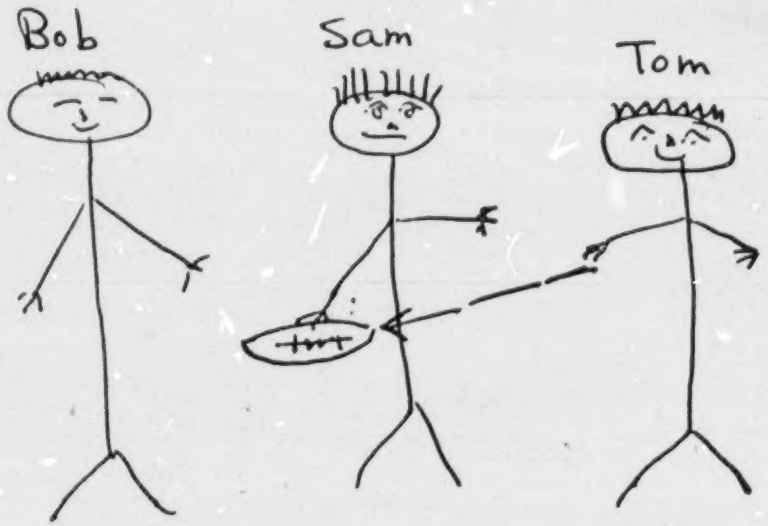
Cruttenden, A. An experiment involving comprehension of intonation in children from 7 to 10. Journal of Child Language, 1974, 1, 221-231.

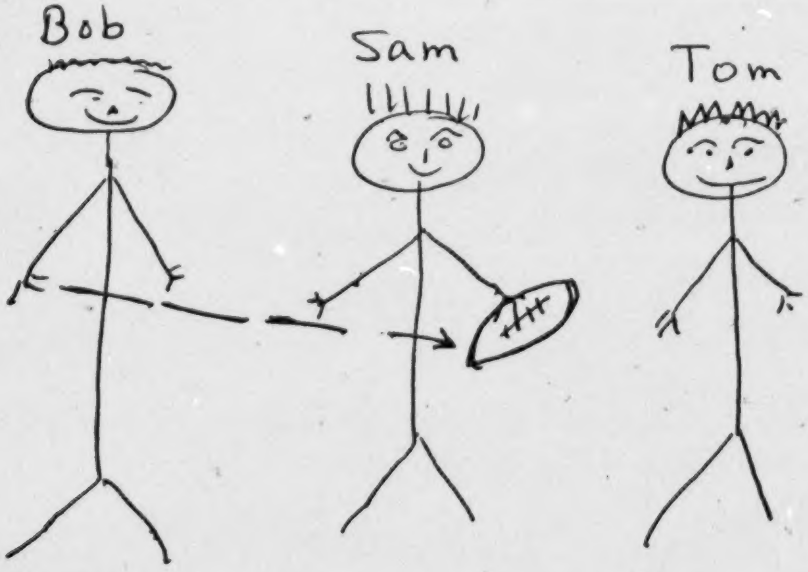
Miller, W.R., & Ervin, S.M. The development of grammar in child language. In U. Bellugi & R. Brown (Eds) The acquisition of language. Monographs of the Society for Research in Child Development, 1964, 29 (1), 9-33.

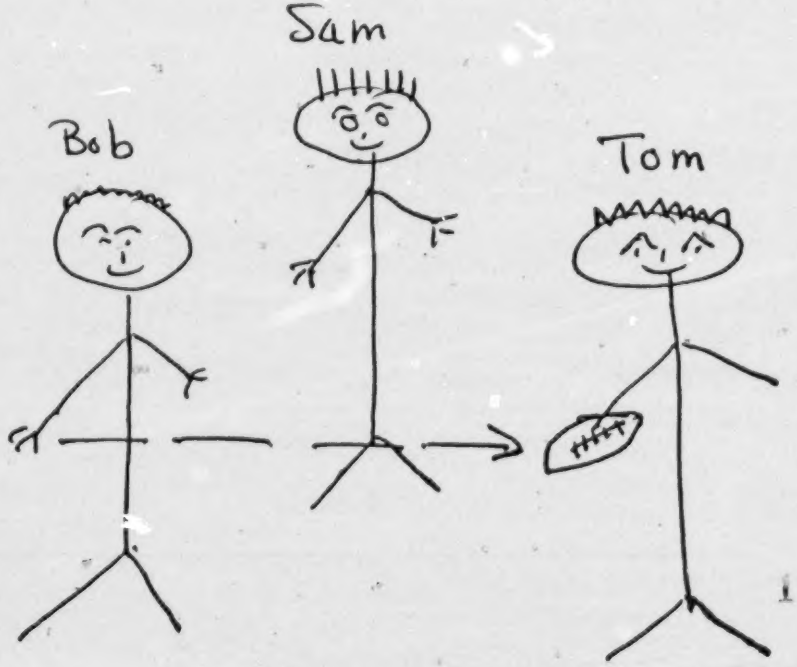
Number	Date	Rank	Sex	Race	SENTENCE Throw	Sam	Bob	R/LA	
1	5/May	3 of 3	F	W	1	2	4	T	
2	5/Jul	3 of 2	M	W	1	1	1	T	
3	6/Jan	2 of 2	F	W	1	1	1	M	
4	5/Apr	1 of 2	M	B	3	2	3	M	
5	6/Mar	1 of 1	M	W	1	1	1	M	
6	5/May	4 of 4	F	B	1	4	2	M	*
7	5/Jun	2 of 2	M	W	1	1	1	B	
8	5/Jun	2 of 2	F	B	3	3	3	B	
Level K					6	1	1	8/1	
9	6/Jul	1 of 2	M	W	1	4	4	T	
10	7/Nov	2 of 2	F	W	1	4	2	T	*
11	7/Dec	1 of 2	M	B	1	4	2	M	*
12	6/Sep	1 of 1	F	B	1	4	4	M	
13	6/Sep	3 of 3	F	B	1	2	4	M	
14	6/Jun	2 of 2	F	W	1	4	1	M	
15	7/Mar	2 of 3	M	W	1	1	1	B	
16	6/Jul	2 of 3	M	B	4	4	4	B	
Level 1					7	6	2	15/2	
17	8/Feb	2 of 3	F	W	1	4	2	T	*
18	7/May	2 of 3	M	W	1	4	2	T	*
19	7/May	1 of 3	F	W	1	1	1	B	
21	8/Jan	1 of 1	F	W	1	4	2	B	*
22	7/Apr	1 of 2	M	W	1	1	1	M	
23	8/Nov	1 of 2	M	B	1	4	2	M	*
24	7/May	2 of 3	M	W	1	4	2	M	*
20	7/Jul	3 of 3	F	B	1	4	4	M	
Level 2					8	6	5	19/5	
25	8/Apr	2 of 3	M	B	1	1	1	B	
26	8/Jul	3 of 4	F	B	1	1	1	B	
27	8/Sep	2 of 2	M	W	1	1	1	T	
28	8/Apr	2 of 3	F	W	1	1	1	T	
29	8/Jul	2 of 3	F	W	1	4	4	M	
30	8/Sep	1 of 2	F	W	1	1	1	M	
31	9/Jan	2 of 4	M	W	1	4	2	M	*
32	9/Apr	1 of 2	M	W	1	4	2	M	*
Level 3					8	3	2	13/2	
33	9/Apr	4 of 4	M	W	1	1	4	3	
34	9/May	2 of 4	M	B	1	1	1	M	
35	10/Jan	4 of 4	M	W	1	4	2	M	*
36	9/Jul	2 of 3	M	B	1	1	1	M	
37	10/Feb	5 of 5	M	W	1	4	1	T	
38	10/Mar	1 of 2	F	B	1	4	4	M	
39	10/Feb	1 of 2	M	B	4	4	4	B	
40	10/Oct	3 of 4	F	W	1	2	4	T	
Level 4					7	4	1	12/1	
41	11/Oct	1 of 2	M	B	1	4	3	B	
42	10/Jan	1 of 2	M	W	1	4	2	T	*
43	10/Aug	1 of 4	F	W	1	2	2	B	
44	10/Sep	3 of 4	F	W	1	1	4	M	
45	10/May	1 of 3	F	B	3	4	4	M	
46	10/Apr	1 of 2	F	W	1	4	2	T	*
47	10/May	1 of 3	M	W	3	1	4	M	
48	10/Jul	3 of 3	M	W	1	4	2	M	*
Level 5					6	5	4	15/3	

49	12/Jan	1 of 2	F	W	4	4	2	T	
50	12/Apr	1 of 1	M	B	1	1	1	M	
51	12/Feb	1 of 3	M	W	1	4	2	M	*
52	11/Sep	1 of 3	M	W	1	4	2	M	*
53	11/Sep	4 of 4	F	W	1	1	1	M	
54	12/Jan	2 of 2	F	B	1	4	1	M	
55	11/Sep	3 of 3	M	B	1	1	1	B	
56	12/Nov	1 of 3	M	W	1	4	2	T	*
Level 6					7	5	4	17/3	


Bob
Sam
Tom


Bob
Sam
Tom


Bob
Sam
Tom


Sam
Bob
Tom